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(56)参考文献 特開 昭55-81693(JP, A)

特開 昭62-213794(JP, A)

特開 昭64-5592(JP, A)

(54)【発明の名称】 ミシンの上糸供給装置

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(57)【特許請求の範囲】

【請求項1】ボビンに巻かれその外周から繰出される糸と、その糸を収納するに足る穴と、一側面に前記糸の端部が外方へ導出される穴と、他の一側面に複数のノッチを有するカセット本体、

ほぼL字状をなし、一端で前記糸を挟持し他端に突起部を有する板バネ、

前記カセット本体と板バネとこれらを包み込むカバーとからなり、ミシンケーシングの天ビン近くに設けた凹部に装着脱自在に配設したミシンの上糸供給装置。

【請求項2】ボビンに巻かれその外周から繰出される糸と、その糸を収納するに足る穴と、一側面に前記糸の端部が外方へ導出される穴と、他の一側面に複数のノッチを有するカセット本体、

ほぼL字状をなし、一端で前記糸を挟持し他端に突起部

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を有する板バネ、

糸カセットは前記カセット本体と板バネとこれらを包み込むカバーとからなり、該糸カセットのカバーの一角に面取りを施し、ミシンケーシングに設けた前記糸カセットを受入れる凹部に、前記カバーの面取りに沿う形状の内面取りを施してなるミシンの上糸供給装置。

【請求項3】糸の端部を外方へ導出する穴が設けられたカセット本体の一側面に、一端にスリットを設けたシール部材を貼付してなる特許請求の範囲第1項記載のミシンの上糸供給装置。

【発明の詳細な説明】

【発明の目的】

(産業上の利用分野)

本発明は、ミシンの上糸供給装置に関するものである。

(従来の技術)

従来のミシンの糸供給装置、例えば第14図に示すようなものにおいては、アーム101上部の糸立棒102に装架した糸コマ103の糸が、糸調子104、糸掛け105、図示せぬ天ビン等を経て針106の針穴に通され、周知のようにベッド下面の釜に捕足されて縫製が行われるようになっている。

(発明が解決しようとする問題点)

上記従来のものにおいては、縫製時糸の消費に伴い、糸コマが回転して糸が繰出されるが、天ビンによる糸締めはかなり急激であるため、糸コマはオーバーランし易く、その際、糸が自ら糸コマからほどけることがある。(特に刺しゅう糸のようなすべすべした糸にそのような現象が起り易い。)このため、糸張力は糸コマの質量が付加されたり、されなかつたりして張力変動が起り、下糸との調和が乱れて縫い上りが見苦しくなるといふ不都合があつた。また住々にして糸コマから外れた前記糸が、糸立棒にからまり糸切れを起こす恐れもあつた。

尚、上記不都合を防止する手段として、第15図に示すような糸コマ配置方法も知られるが、糸コマと糸掛けとの距離をかなり長くとりないと、糸が円滑に繰出されないという欠点がある。従つて、配置スペース上に問題点があつた。

本発明では、糸コマの質量に影響されることなく糸を繰出せるようにすることを課題としたものである。

(発明の構成)

(問題点を解決するための手段)

前記課題を解決するために、本発明が講じた技術的手段は次の通りである。即ち、糸コマを水平に配置し、糸全体をカセットに入れ、そのカセットに糸張力の付与、調整機構を設けた。そして前記カセットを、ミシンケーシングの天ビン近くに装着脱自在に配設した。

(作用)

ボビンに巻かれた糸は、水平状態にカセット内に収められ、その糸端は、カセット内に設けた板バネにより、適宜の張力が付与されて該カセットの外側に繰出される。前記カセットは、ミシンケーシングの天ビン近くに設けた凹部に収納され、前記糸は糸取りレバーを経て天ビンに導かれ、周知の機構により縫製が行われる。

而して、ボビンに巻かれた糸は、天ビンにより急激に引つばれオーバーランしても、糸は水平状態に巻かれているため、従来のように自らほどけることがなく、わずかなゆるむ程度である。また、糸立棒が無くカセットの中にはいつているため、糸がからまることもない。

(実施例)

以下、第1～13図を参照し、小形の刺しゅうミシンに適用した本発明の実施例について説明する。

ベッド1に、図示せぬ軸受で回動自在に軸支された主軸2の一端には、クランク3が固着されており、クラン

クロツド4、クランクビン5を介して針棒腕6と連接されている。前記針棒腕6は、その中央に固着された動揺軸7が球形ブツシング8、8により軸支され、一端には針棒9が固着され、該針棒9には針留め11、針留めねじ12により針13が固着されている。大タイミングギヤ26aと小タイミングギヤ26bにはタイミングベルト22が掛けられ大タイミングギヤ26aと小タイミングギヤ26bの歯数の比は2:1となつている。これにより、釜23は、主軸2の1回転中に2回転する。クランク3には天ビンクランクビンが回動自在に嵌合しておりブツシング15、ブツシングホルダ16を介して天ビン19に固着されたスライド軸17に運動が伝えられ、天ビン軸18に軸支された天ビン19が早戻り運動を起こしつつ動揺する。前記天ビン19の一端には、天ビンロッド21の一端がビン20により揺動可能に連結されている。また、前記天ビンロッド21の他端には一体の溝21a、21aとフック21bが設けられている。

機枠28はベッド1の上面にねじ締めされていてガイド板29が固着されている。ガイド板29は略し字状をしており、その水平部分には、前記天ビンロッド21の溝21a、21aが嵌入してスライド可能な長尺29aを有している。前記ガイド板29の垂直部分には、スライド板に固着された頭付きビン33、33が嵌入しスライド可能な長穴29b、29bが設けられている。トツブカバーラッチ34は、T字状をしており第1の腕にはフック部34a、第2の腕にはばね掛け部34b、第3の腕には押付作動部34cがそれぞれ形成され中央部には穴34dが形成されている。そして、前記ガイド板29に固着された軸34に遊嵌している(第2、4図参照)。ばね34は、前記トツブカバーラッチ34のばね掛け部34bと前記スライド板32の下方に設けられた突起32aとに掛けられ第6図に於いてトツブカバーラッチ34を時計方向に回動付勢し、スライド板32を上方に付勢している。

糸取りレバー39は、略Y字状をしており、第1の腕は糸掛け部39a、第2の腕はセンサ作動部39b、第3の腕は離脱レバー部39cを有し、中央には、穴39dが形成され、取付板36に固着された軸37に遊嵌している。ねじりばね38の一端38aは、前記糸取りレバー39に掛けられ他端38bは前記取付板36の前記37の回りに穿けられた複数の穴36aの内の一に掛けられており第6図に於いて常に反時計方向に前記糸取りレバー39が回動するように付勢されている。フォトインタラプタ42は、スペーサ41を介して取付板36にねじ43により取付けられ、そのスリット部42aは、前記糸取りレバー39のセンサ作動部39bに係合している。そして取付板36は、ねじ44によりガイド板29に取付けられている。46は下ケーシング、47は上ケーシングであり前記機構部を覆っている。前記上ケーシング47には凹部47aが設けてあり糸カセット100(第9図)が挿入される。該糸カセット100はボビンに巻かれた51、カセット50、板バネ52、ビン53、シール54、カバー55から成っており、前記カセット50は中央部に前記糸51の外径より若干

大きい穴50aと、糸51の端部51aが挿通するスリット50bと同じく前記糸51の端部51aが挿通するT字状の穴50cとを有して前記糸51は、前記穴50aに収まりその端部51aがスリット50b、穴50cを通りカセット100の外側に出ている。板ばね52は、略し字状をしており一端部には、突起52aを有し、前記カセット本体の側面に設けられた複数のノッチ50dの1つに係合し他端は、ピン53との間で前記糸51の端部51aを挟持し、張力を付与している。

糸の種類や糸の太さが変わった場合は、前記カセット本体50のノッチ50dと、前記板ばね52の突起52aの係合位置を変えることにより前記ピン53と前記板ばね52の挟持圧を変え、張力を調整することが出来る。

カバー55は透明な合成樹脂で成形されており前記カセット本体50に覆せられ、前記糸51の放出防止を行つている。各カバー55の一角部は大きく面取りを施してあり、上ケーシング47の凹部47aも同じく面取りを施し、使用者が糸カセット100を間違えて、逆に挿入しようとした場合は、全体が入らないため、すぐ気付くようにしてある。54は、糸のカタログNo.や番手、色調、名称等を表示したシールで前記カセット本体50の前記穴50cが設けられた側面に貼付されている。該シール54の一端には、スリット54aが切られており前記カセット本体の穴50cの近くに来るようにシール54が貼付けられる。しかして、糸カセット100を不使用時は前記カセット本体50の穴50cから出ている前記糸51の端部51aを前記スリット54aに挟み込むことにより、糸51の端部51aがみだりに繰り出されたり逆にカセット100内に入り込んでしまつたりするのを防止することが出来る。56は糸カセット放出ボタンで、糸カセット10を上ケーシング47の凹部47aから放出する時使用する。該糸カセット放出ボタン56の先端は、糸カセット放出レバー57の一端と連結されている。糸カセット放出レバー57は、中央に一对の突起57a,57aを有しており、前記上ケーシング47の凹部47aの下部に設けられた一对の切り欠き47b,47bに係合しており該糸カセット放出レバー57は、該突起57a,57aを中心として動揺可能である。該糸カセット放出レバーは、ばね58の一端が前突起57a,57aを通過するように掛けられ他端は、前記上ケーシング47の凹部47aの下部に設けられた一对の切り欠き47c,47cに係止されたピンに掛けられている。このため、糸カセット放出ボタン56を下方に押すと、第6図に於いて、糸カセット放出レバー57が時計方向に回転し、中間点を過ぎるとばね58によりさらに時計方向に回そうとする荷重を受けるが、前記糸カセット放出ボタン56によりストップされる。

この時、糸カセット100は、前記糸カセット放出レバー57の端部57bにより若干量放出される。逆に糸カセット100を下方に押し込むと、前記糸カセット放出レバー57がばね58に抗して反時計方向に回転し糸カセット放出ボタン56を押上げる。そして、中間点を過ぎると前記ば

ね58によりさらに反時計方向に回そうとする荷重を受けるが、前記ピン59によりストップされる。71はパイロットランプで図示しないが電源スイッチを投入すると点灯し、又、前記フォトインタラプタ42からのパルス信号が出なくなると点滅するようマイコンにより制御する。73はランプリズム、72は基板である。67はトップカバーで上ケーシング47をカバーしておりヒンジ60により前記機構枠28に固着された一对のヒンジピン63,63を中心として回転可能である。62はばねで、前記ヒンジ60に固着されたばね掛け61と前記機構枠28に固着されたばね掛け64に掛けられ、常に前記トップカバーが開放するよう付勢している。前記ヒンジ60には歯車部60a,60aが形成されており前記機構枠28に取付けられたダンパ65,65と噛み合い前記トップカバー67が開放する時ショックを柔らげている。前記トップカバー67の端部にはフック67aが形成されたトップカバー67を開めた時は、トップカバーラッチ34のフック部34aと噛み合いトップカバー67に係止している。さらに前記フック67aの先端は、前記スライド板32の舌片32bに当接しており、トップカバー67によりスライド板32は、前記ばね35に抗して押し下げられている。69は、トップカバーボタンでトップカバー67の穴67bに係合し、上方に向つて伸びた腕69a,69aには、突起69b,69bが形成され前記トップカバー67の穴67c,67cに嵌合しており動揺可能である。さらに、ばね70により常に外方に向つて付勢されている。トップカバーボタン69は、舌状突起69cを有しており前記トップカバーラッチ34の押付作動部34cに当接している。天ビンカバー48は、前記天ビンロッド21のフック21hを覆っておりその上面には、糸案内49が固着されている。

以下、裁縫手順に従つて動作説明する。

トップカバーボタン69を押すと舌状突起69cがトップカバーラッチ34の押付作動部34cを押圧し、トップカバーラッチ34がばね35に抗して反時計方向に回転し、フック部34aがトップカバー67のフック37aから外れる。トップカバー67は、ばね62により常に開放されるよう付勢されているため、第7図のように開く。一方、スライド板32は、トップカバー67の押圧力が無くなるため、ばね35により上方に引き上げられ、該スライド板32の突起32cが、糸取りレバー39の離脱レバー39cをねじりばね38の力に抗して押し上げる。このため、糸取りレバー39は、時計方向に回転してセンサ作動部39bがフォトインタラプタ42のスリット部42aをしゃへいする。この時フォトインタラプタ42から出ている信号は、常時Hiとなりマイコンは、トップカバー67が開いていると判断する。次に糸カセット100を上ケーシング47の凹部47aに挿入すると、糸カセット放出レバー57がばね58に抗して揺動し、糸カセット放出ボタン56が上昇する。糸51の端部51aを引き出し糸取りレバー39のフック部39a、天ビンロッド21のフック21bに引掛け糸案内49を経て、針13に通す。

〔発明の効果〕

本発明と目的を一にして、コンピュータを用い糸張力の調整を行うことも考えられる。しかし、糸の種類を自動的に判別することは、困難なことであり、しかも糸張力の変化は糸の材質・太さにより大きく変わるものであるから、この考えもまだ現実性に乏しい。

本発明では、糸はカセットに収められているため、向上に於いて糸の種類、太さに見合った張力を設定し、出荷すればユーザーは何も調整することなく、カセットをポンと入れ糸くばりを行い針に糸を通すのみで縫い始めることが出来る。

また、糸が繰出されるカセットの、一側面に貼付した前記シール部材にスリットを入れたことにより、該カセットの不使用時、糸端しをこれに挟み込んで、不用意な糸の繰出し、繰込みを防止することができる。

【図面の簡単な説明】

*

* 第1図は本発明装置を備えたミシンの外観図、第2図は構成要部部品の展開説明図、第3図はトップカバーを外した平面図、第4,5,6図の夫々は、第3図のA-A,B-B,C-C矢線断面図、第7図は第6図示トップカバーを開いた図、第8及び9図は夫々糸カセットの縦及び横方向断面図、第10ないし13図は主軸センサと糸切れセンサのパルス信号の発信状態を示す図ならびに第14及び15図は、従来技術の説明図である。

19……天ビン、

10 47……ミシンケーシング、

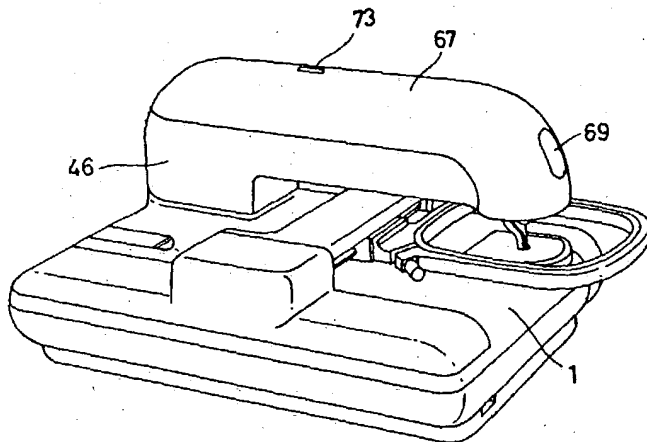
47a……凹部、50……カセット本体、

51……糸、52……板バネ、

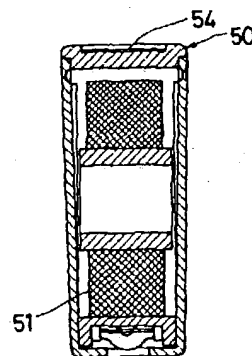
54……シール、54a……スリット、

55……カバー、100……糸カセット

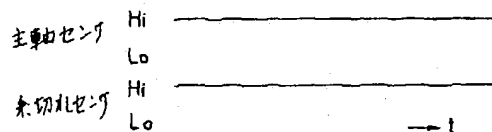
【第1図】



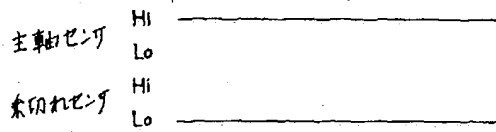
【第8図】



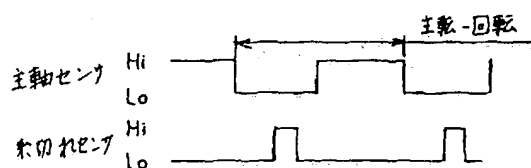
【第10図】



【第11図】



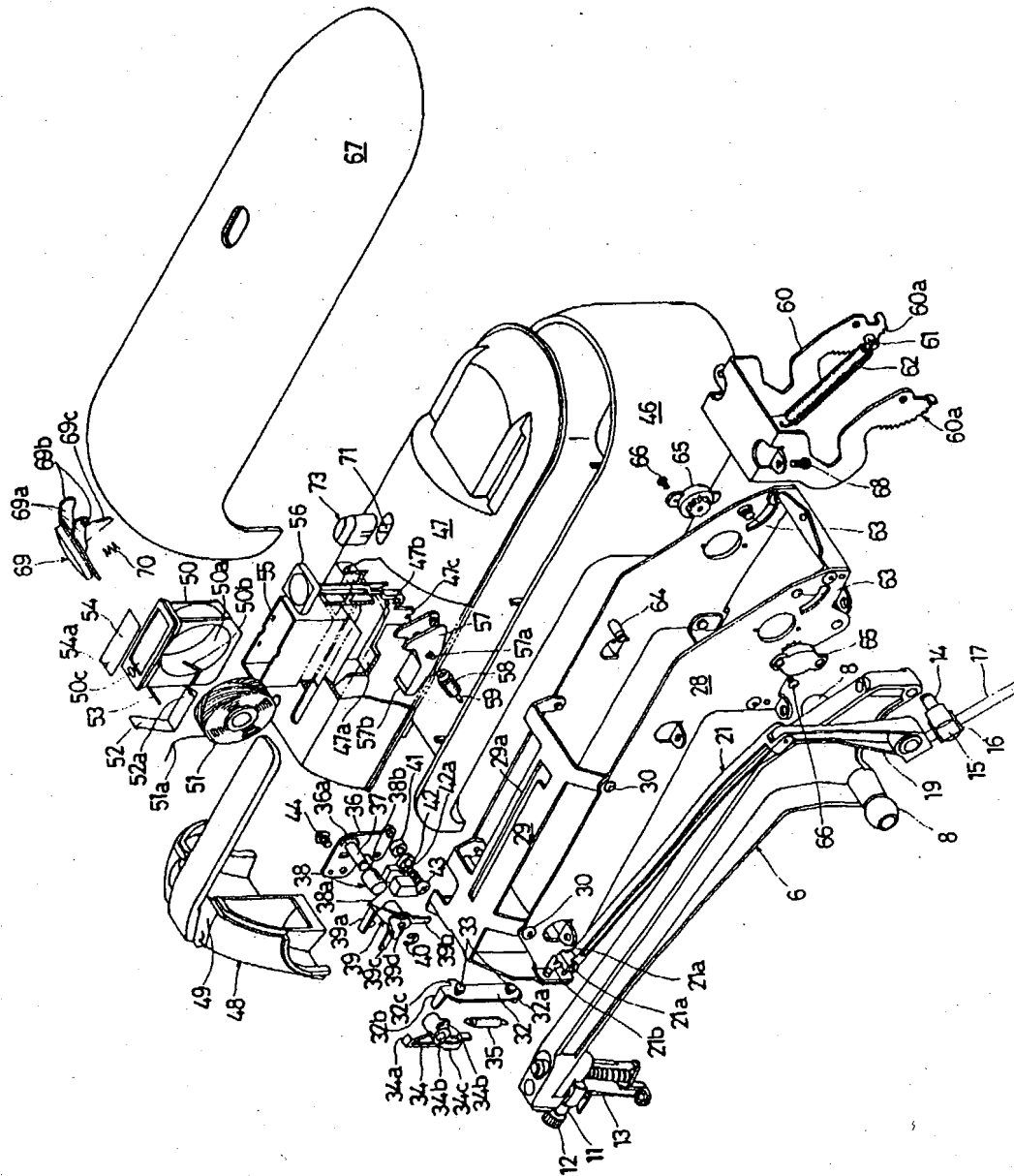
【第12図】



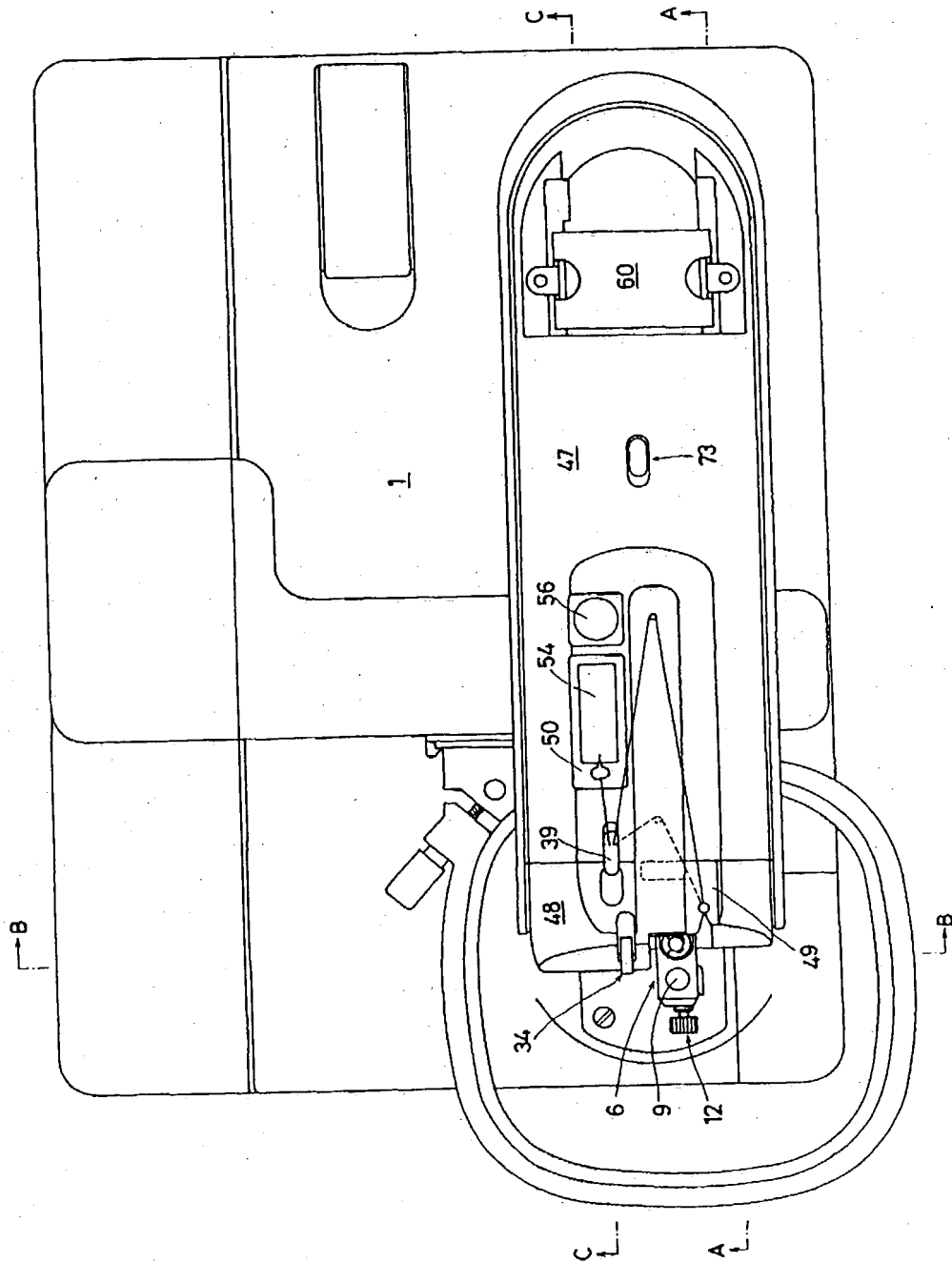
【第13図】



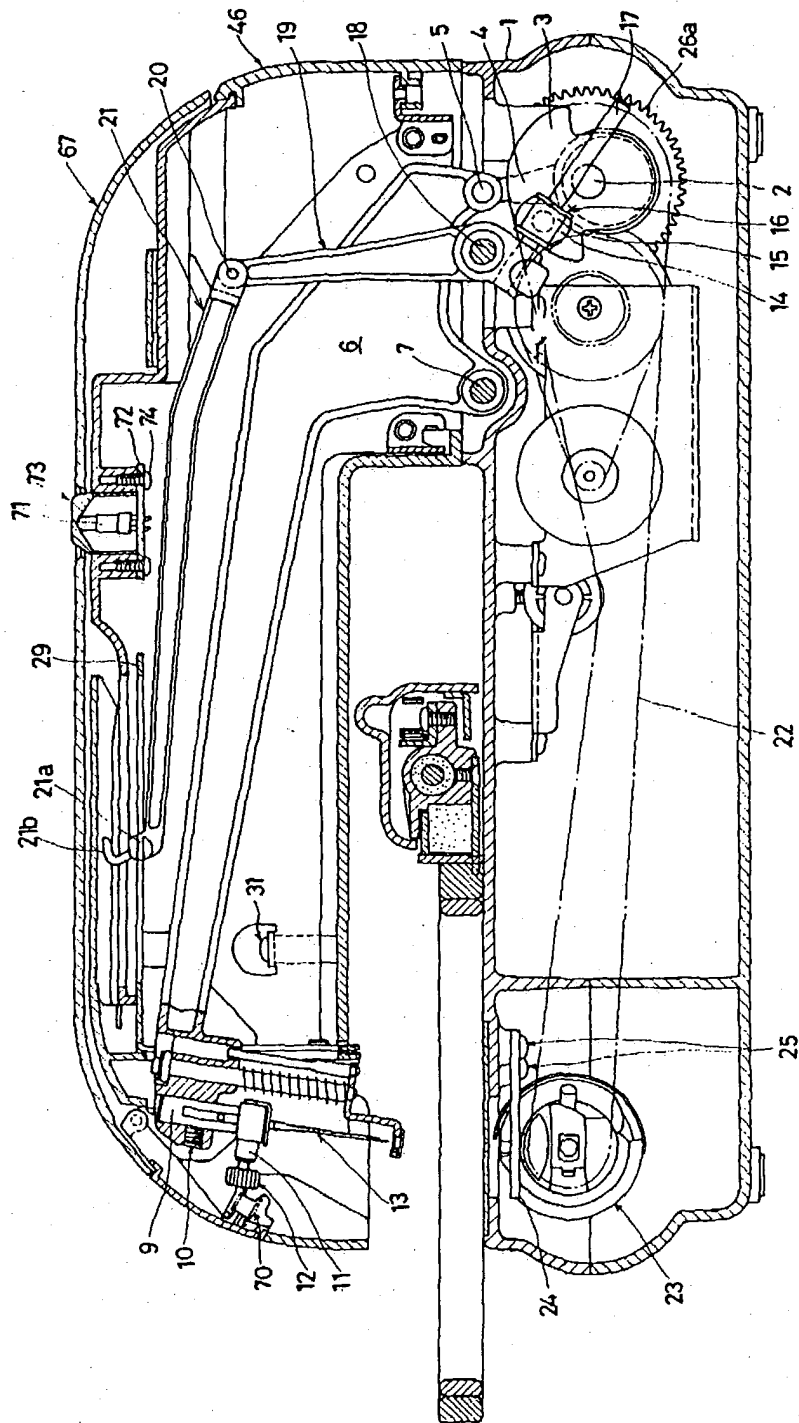
【第2図】



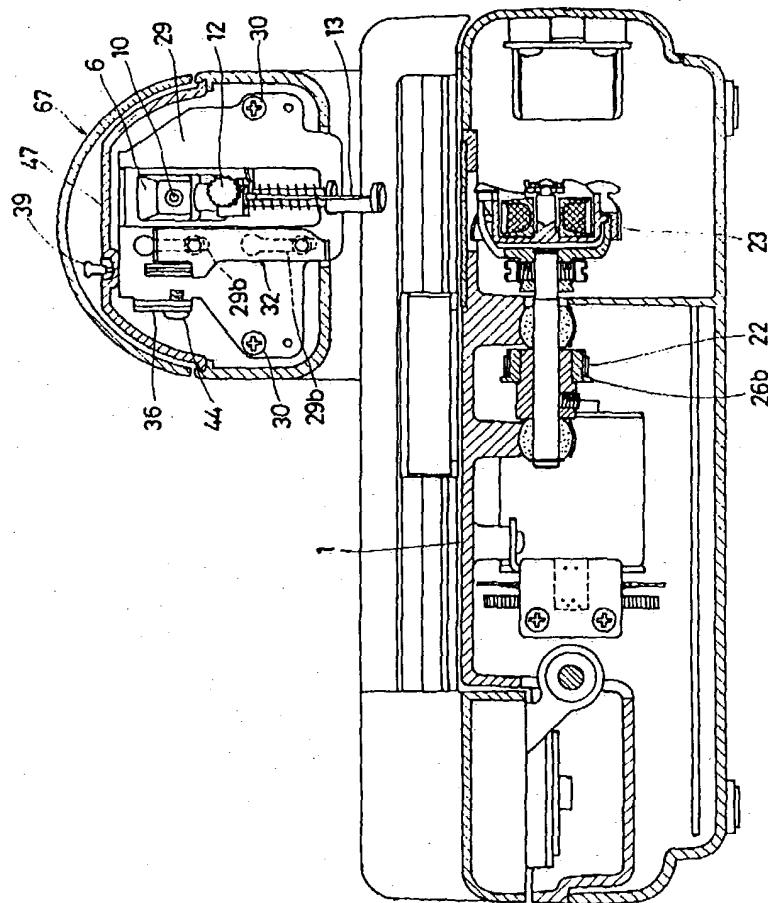
【第3図】



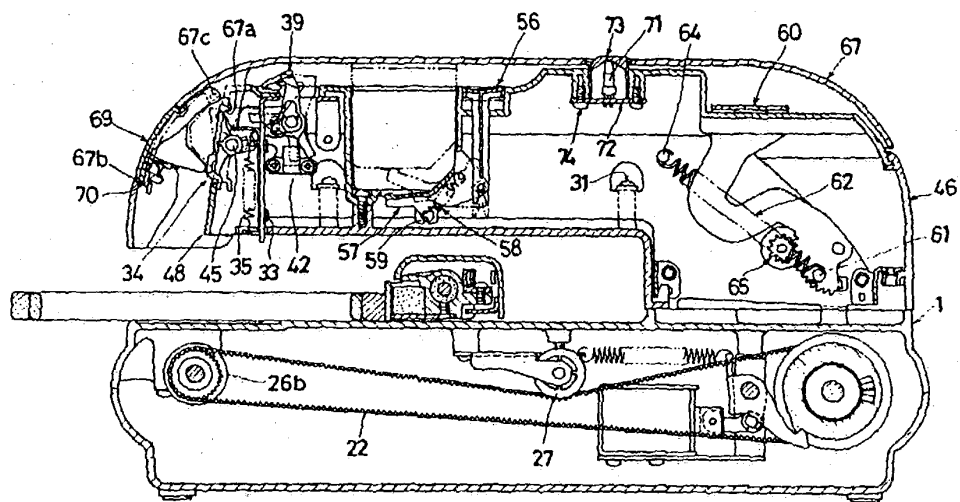
【第4図】



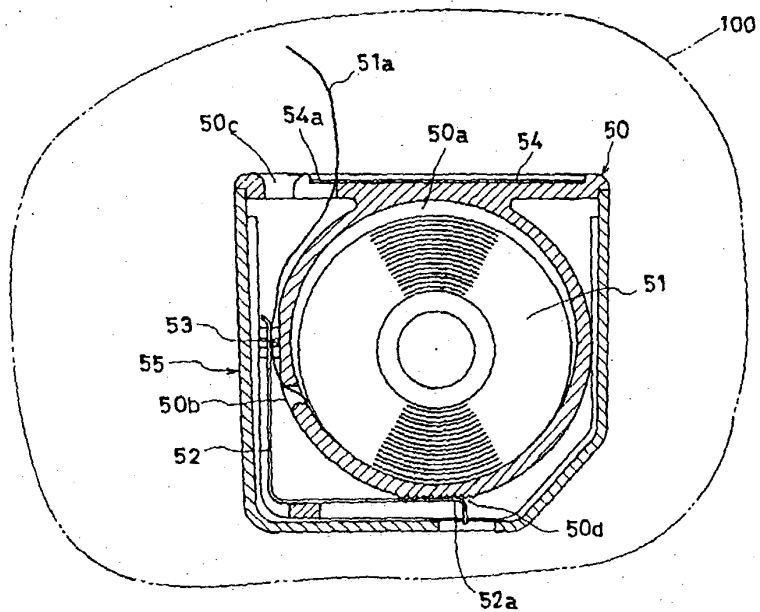
【第5図】



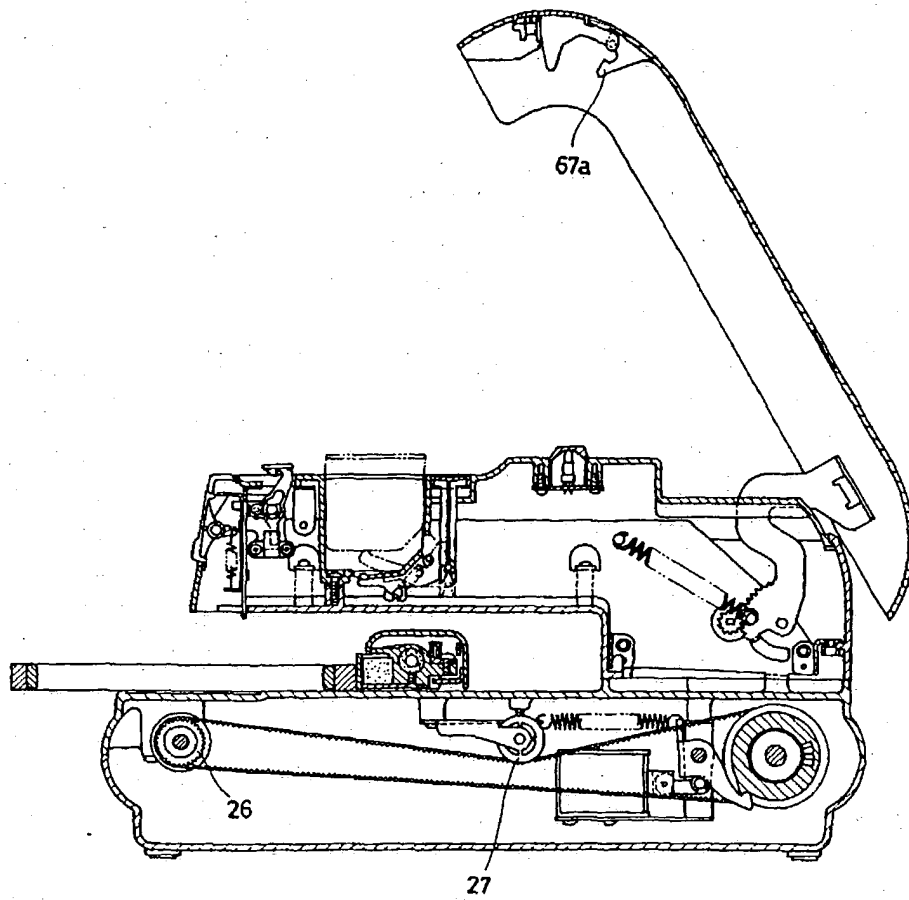
【第6図】



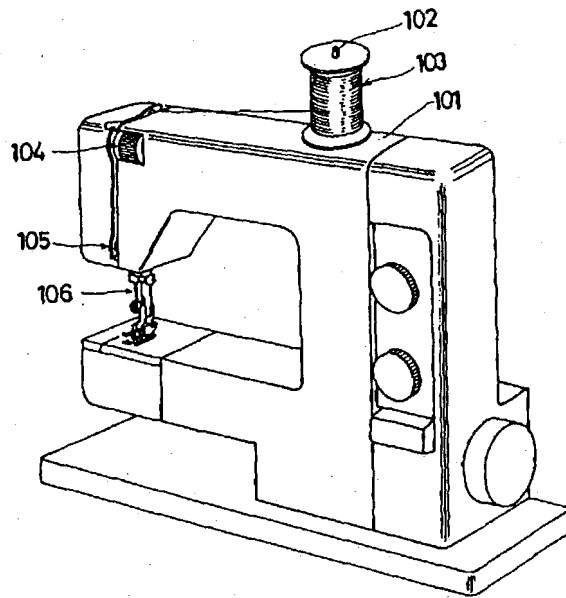
【第9図】



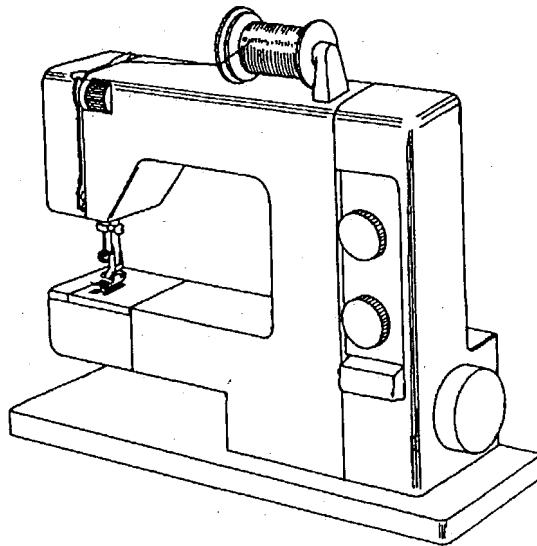
【第7図】



【第14図】



【第15図】



NEEDLE THREAD SUPPLIER FOR SEWING MACHINE

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Equivalents: JP2650261B2

Abstract

PURPOSE: To deliver a thread without being affected by the mass of a thread drum by horizontally arranging the thread drum, putting the entire thread in a cassette and providing an imparting and adjusting mechanism of thread tension on the cassette.

CONSTITUTION: The cassette 50 is provided with a hole 50a slightly larger than the outer diameter of the thread 51 on a center part and a slit 50b and a T-shaped hole 50c for inserting the end part 51a of the thread 51, the thread 51 is housed in the hole 50a and the end part 51a is passed through the slit 50b and the hole 50c and discharged to the outer side of the cassette 100. Then, an almost L-shaped leaf spring 52 is provided with a projection on one end part, it is engaged with one of plural notches 50d provided on one side face of a cassette body and the other end clamps the end part 51a of the thread with a pin 53 and imparts tension. Thus, in the case that the kind of the thread or the thickness of the thread is changed, by changing the engaging position of the notch 50d and the projection of the leaf spring, the clamping pressure of the pin 53 and the leaf spring 52 is changed and the tension is adjusted.

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CLAIMS

(57) [Claim(s)]

[Claim 1] The needle-thread feeder of the sewing machine arranged in the crevice which consisted of the main part of a cassette characterized by providing the following, the flat spring which pinches the aforementioned thread for the shape of about L characters by nothing and the end, and has a height in the other end, the aforementioned main part of a cassette and a flat spring, and covering which wraps these in, and was prepared near the heavens bottle of sewing-machine casing free [*****]. Thread which is wound around a bobbin and sent out from the periphery. The hole which is sufficient for containing the thread. The hole where the edge of the aforementioned thread is drawn by the method of outside in an unilateral side. The notch of plurality [sides / unilateral / other].

[Claim 2] The main part of a cassette characterized by to provide the following, the flat spring which pinch the aforementioned thread by nothing and the end for the shape of about L characters, and have a height in the other end, and a thread cassette are the needle-thread feeder of a sewing machine [come / to give / in inner beveling of a configuration which meets the crevice in which the aforementioned thread cassette which consisted of the aforementioned main part of a cassette, a flat spring, and covering that wraps these in, beveled in one corner of covering of this Thread which is wound around a bobbin and sent out from the periphery. The hole which is sufficient for containing the thread. The hole where the edge of the aforementioned thread is drawn by the unilateral side to the method of outside. The notch of plurality [sides / unilateral / other].

[Claim 3] The needle-thread feeder of the sewing machine given in the 1st term of a patent claim which comes to stick the seal member which prepared the slit in the end on the unilateral side of the main part of a cassette in which the hole which derives the edge of thread to the method of outside was established.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[Objects of the Invention]

(Field of the Invention)

this invention relates to the needle-thread feeder of a sewing machine.

(Prior art)

Intermediary **** [as] to which the pinholing of a needle 106 lets the thread of the thread coma 103 constructed across ***** 102 of the arm 101 upper part pass through stitch balancing thread tension 104, a thread guard 105, the heavens bottle that is not illustrated, it is ****(ed) as everyone knows by the iron pot under a bed in a thing as shown in the conventional needle-thread feeder, the 14th [for example,], view of a sewing machine, and sewing is performed.

(Trouble which invention tends to solve)

In the above-mentioned conventional thing, although a thread coma rotates and thread is sent out with consumption of a needle thread at the time of sewing, since the thread bundle by the heavens bottle is quite rapid, it is easy to overrun a thread coma and thread may come loose from a thread coma itself in that case. (Such a phenomenon tends to happen to thread like especially embroidery thread which carried out smooth.) For this reason, it is ***** un-arranging [that it has been added enough, the mass of a thread coma ***** needle thread tension inside, tension change takes place, harmony with a bobbin thread is confused, and sew going up becomes unsightly]. Moreover, a possibility of the aforementioned thread which made it **** and separated from a thread coma twining round *****, and causing the thread breakage is also *****.

In addition, as a means to prevent above-mentioned un-arranging, although a thread coma configuration method as shown in a view 15 is also known, if a quite long distance of a thread coma and a thread guard is not taken, there is a fault that thread is not sent out smoothly. Therefore, a trouble is ***** on an arrangement space.

without it is influenced by the mass of a thread coma in this invention -- thread -- delivery **** -- let it be a technical problem to make it like

[Elements of the Invention]

(Means for solving a trouble)

In order to solve the aforementioned technical problem, the technical means which this invention provided are as follows. That is, a thread coma has been arranged horizontally, the whole thread was put into the cassette, and grant of a yarn tension and the adjustment mechanism were prepared in the cassette. And the aforementioned cassette was arranged free [*****] near the heavens bottle of sewing-machine casing.

(Operation)

The thread wound around the bobbin is stored by the level state in a cassette, proper tension is given by the flat spring prepared in the cassette, and the margin of string is sent out to the outside of this cassette by it. The aforementioned cassette is contained by the crevice prepared near the heavens bottle of sewing-machine casing, the aforementioned thread is led to a heavens bottle through a ***** lever, and sewing is performed by the well-known mechanism.

Even if the thread which *(ed) and was wound around the bobbin is rapidly pulled by the heavens bottle and it overruns it, since thread is wound around the level state, it is a grade which does not come loose itself like before and loosens only. Moreover, there is no *****, it is in a cassette, and,

for an intermediary **** reason, thread does not twine.

(Example)

Hereafter, with reference to a view 1-13, the example of this invention applied to the small embroidery sewing machine is explained.

The crank 3 has fixed at the end of the main shaft 2 supported to revolve with the bearing which is not illustrated free [rotation], and the bed 1 is connected [arm / needle-bar / 6] through the crank connecting rod 4 and the crank pin 5. The axis of oscillation 7 which fixed in the center were supported to revolve by the globular form bushings 8 and 8, the needle bar 9 fixed at the end, and the needle 13 has fixed the aforementioned needle-bar arm 6 by the needle stop 11 and the needle rivet 12 to this needle bar 9. A timing belt 22 is hung on large timing-gear 26a and small timing-gear 26b, and the ratio of the number of teeth of large timing-gear 26a and small timing-gear 26b is 2:1 and intermediary ****. Thereby, an iron pot 23 rotates two times during 1 rotation of a main shaft 2. Movement is told to the slide shaft 17 which the heavens bottle crank pin had fitted into the crank 3 free [rotation], and fixed into the heavens bottle 19 through the bushing 15 and the bushing electrode holder 16, and it is shaken, the heavens bottle 19 supported to revolve by the heavens bottle shaft 18 already causing return movement. The end of the heavens bottle rod 21 is connected with the end of the aforementioned heavens bottle 19 by the pin 20 at the rockable. Moreover, the slots 21a and 21a on one and hook 21b are prepared in the other end of the aforementioned heavens bottle rod 21.

Thread fastening of the machine frame 28 is carried out to the upper surface of a bed 1, and the guide plate 29 has fixed it. The guide plate 29 is carrying out the letter of the abbreviation for L characters, and the slots 21a and 21a of the aforementioned heavens bottle rod 21 insert it in the level portion, and it has into it long 29a which can be slid. The pins 33 and 33 with the head which fixed to the slide board insert in a part for the vertical section of the aforementioned guide plate 29, and the slots 29b and 29b which can be slid are formed in it. The top covering latch 34 is carrying out the shape of T character, operation section 34 with ** c is formed in spring-peg section 34b and the 3rd arm on the 1st arm at hook section 34a and the 2nd arm, respectively, and 34d of holes is formed in the center section. And it has fitted loosely into the shaft 34 which fixed to the aforementioned guide plate 29 (refer to the 2nd and 6 view). A spring 34 is hung on spring-peg section 34b of the aforementioned top covering latch 34, and salient 32a in which the aforementioned slide board 32 was formed caudad, carries out rotation energization of the top covering latch 34 clockwise in a view 6, and is energizing the slide board 32 up.

The ***** lever 39 was carrying out the letter of the abbreviation for Y characters, thread-guard section 39a and the 2nd arm had sensor operation section 39b, the 3rd arm had secession lever section 39c, 39d of holes was formed in the center, and the 1st arm has fitted loosely into the shaft 37 which fixed to the tie-down plate 36. end 38a of torsion spring 38 should be hung on the aforementioned **** lever 39, and put on other end 38b around the above 37 of the aforementioned tie-down plate 36 -- it is energized so that it may be hung on one of hole 36a of ***** plurality and the aforementioned ***** lever 39 may always rotate counterclockwise in a view 6 A photo interrupter 42 is *****ed to a tie-down plate 36 through a spacer 41, and is attached by 43, and the slit section 42a is engaging with sensor operation section 39b of the aforementioned **** lever 39. And the tie-down plate 36 is attached in the guide plate 29 with the screw thread 44. 46 is lower casing, 47 is upper casing, and it is ***** about the aforementioned mechanism section. The crevice a47 is established in the above top caging 47, and the thread cassette 100 (view 9) is inserted. Hole 50a a little in the center section with larger 51 and the cassette 50 by which this thread cassette 100 was wound around the bobbin, flat spring 52, pin 53, seal 54, ***** cage from covering 55, and aforementioned cassette 50 than the outer diameter of the aforementioned thread 51, It has hole 50c of the shape of T character which edge 51a of the aforementioned thread 51 inserts in as well as slit 50b which edge 51a of thread 51 inserts in, and the aforementioned thread 51 was settled in the aforementioned hole 50a, and the edge 51a has come out of it to the outside of a cassette 100 through slit 50b and hole 50c. It is carrying out the letter of the abbreviation for L characters, and flat spring 52 had salient 52a, engaged with one [two or more notch 50d] prepared in the unilateral side of the aforementioned main part of a cassette, and the other end pinched edge 51a of the aforementioned thread 51 in the end section between pins 53, and it has given tension to it.

By changing the engagement position of notch 50d of the aforementioned main part 50 of a cassette, and salient 52a of the aforementioned flat spring 52, the kind of thread and the size of thread can change ***** of the aforementioned pin 53 and the aforementioned flat spring 52, and a ***** case can adjust tension.

It is fabricated by transparent synthetic resin, and can be reversed by the aforementioned main part 50 of a cassette, and covering 55 is line intermediary **** about discharge prevention of the aforementioned thread 51. One corner of each covering 55 is beveled greatly, and when it is similarly going to bevel, a user is going to be mistaken in the thread cassette 100 and it is also going to insert crevice 47a of the upper casing 47 conversely, in order that the whole may not enter, it is made to have noticed it immediately. 54 is stuck on the side in which the aforementioned hole 50c of the aforementioned main part 50 of a cassette was prepared with the seal which displayed catalog No. of thread, the yarn count, the color tone, the name, etc. A seal 54 is stuck on the end of this seal 54 so that slit 54a may be cut and it may come near the hole 50c of the aforementioned main part of a cassette. By carrying out a deer and putting between the aforementioned slit 54a edge 51a of the aforementioned thread 51 to which it has come out of the thread cassette 100 from hole 50c of the aforementioned main part 50 of a cassette at the time of un-using it, it can let out indiscriminately, or it is sufficient and edge 51a of thread 51 can prevent that entering in a cassette 100 conversely and waiting by carrying out carries out. 56 is a thread cassette discharge button, and when emitting the thread cassette 10 from crevice 47a of the upper casing 47, it is used. The nose of cam of this thread cassette discharge button 56 is connected with the end of the thread cassette discharge lever 57. The thread cassette discharge lever 57 has the salients 57a and 57a of a couple in the center, and is engaging with the notching 47b and 47b of the couple prepared in the lower part of crevice 47a of the above top casing 47, and this thread cassette discharge lever 57 can be shaken focusing on these salients 57a and 57a. This thread cassette discharge lever is hung so that the end of a spring 58 may pass processus anterior mallei 57a and 57a, and the other end is hung on the pin stopped by the notches 47c and 47c of the couple prepared in the lower part of crevice 47a of the above top casing 47. For this reason, in a view 6, when the thread cassette discharge button 56 is pushed caudad, although the load which it is going to turn clockwise further with a spring 58 will be received if the thread cassette discharge lever 57 rotates clockwise and passes over a midpoint, it stops with the aforementioned thread cassette discharge button 56.

At this time, amount discharge of the thread cassette 100 is carried out a little by edge 57b of the aforementioned thread cassette discharge lever 57. Conversely, if the thread cassette 100 is pushed in caudad, the aforementioned thread cassette discharge lever 57 will resist a spring 58, will rotate counterclockwise, and will push up a thread cassette discharge button. And although the load which it is going to turn counterclockwise further with the aforementioned spring 58 will be received if it passes over a midpoint, it stops by the aforementioned pin 59. Although a pilot lamp does not illustrate, if an electric power switch is switched on, the light will be switched on, and 71 is controlled by the microcomputer to blink, if the pulse signal from the aforementioned photo interrupter 42 stops coming out. 73 is a lamp lens and 72 is a substrate. 67 is a rotatable focusing on the hinge pins 63 and 63 of the couple which covered the upper casing 47 with top covering, and fixed to the aforementioned machine frame 28 with the hinge 60. 62 is a spring, it is hung on the spring peg 61 which fixed to the aforementioned hinge 60, and the spring peg 64 which fixed to the aforementioned machine frame 28, and it is energized so that the aforementioned top covering may always open. When it gears with the dampers 65 and 65 which the gearing sections 60a and 60a are formed in the aforementioned hinge 60, and were attached in the aforementioned machine frame 28 and the aforementioned top covering 67 opens, it is ***** about a shock. When hook 67a is formed in the edge of the aforementioned top covering 67 and the top covering 67 is shut, it geared with hook section 34a of the top covering latch 34, and the top covering 67 is stopped. Furthermore, the nose of cam of the aforementioned hook 67a is in contact with tongue-shaped piece 32b of the aforementioned slide board 32, and by the top covering 67, the slide board 32 resists the aforementioned spring 35, and is depressed. 69 engages with hole 67b of the top covering 67 with a top covering button, up, Salients 69b and 69b were formed, and has fitted into the holes 67c and 67c of the aforementioned top covering 67, and can be shaken by ***** elongation **** 69a and 69a. Furthermore, ***** energization is always carried out with the spring 70 at the method of outside.

The top covering button 69 has ligulate salient 69c, and is in contact with operation section 34 with ** c of the aforementioned top covering latch 34. Moreover [***** cage] in the field, as for the heavens bottle covering 48, the tension thread guard 49 has fixed hook 21h of the aforementioned heavens bottle rod 21.

a following and needlework procedure -- therefore, explanation of operation is given

If the top covering button 69 is pushed, ligulate salient 69c will press right-hand-side 34 with ** c of the top covering latch 34, and the top covering latch 34 resists a spring 35, it rotates counterclockwise, and hook section 34a separates from hook 37a of the top covering 67. Since it is energized so that it may always be wide opened with a spring 62, the top covering 67 is opened as shown in a view 7. On the other hand, since the press force of the top covering 67 is lost, the slide board 32 can be pulled up up with a spring 35, and salient 32c of this slide board 32 resists the force of torsion spring 38 in secession lever 39c of the ***** lever 39, and it pushes up. For this reason, the ***** lever 39 is rotated clockwise and sensor operation section 39b shields slit section 42a of a photo interrupter 42. The signal which has come out of the photo interrupter 42 at this time always serves as Hi, and it is judged that the top covering 67 is opening the microcomputer. Next, if the thread cassette 100 is inserted in crevice 47a of the upper casing 47, the thread cassette discharge lever 57 will resist a spring, and will rock, and the thread cassette discharge button 56 will go up. Edge 51a of thread 51 is pulled out, and it hooks on hook section 39a of the **** lever 39, and hook 21b of the heavens bottle rod 21, and lets it pass to a needle 13 through a tension thread guard 49.

[Effect of the Invention]

Setting this invention and the purpose to 1 and adjusting a yarn tension using a computer is also considered. However, it is difficult to distinguish the kind of thread automatically, and moreover, since change of a yarn tension changes a lot by the quality of the material and the size of thread, it is still deficient [change] also in this idea to actuality.

By this invention, since thread is stored in the cassette, if ***** tension is set up and shipped to the kind of thread, and a size in improvement, without adjusting anything, a user puts in a cassette with methamphetamine, performs a **** burr, and can begin to sew only by letting thread pass to a needle.

Moreover, by having put the slit into the aforementioned seal member stuck on the unilateral side of the cassette by which thread is sent out, at the time of un-using [of this cassette] it, ***** can be put between this and delivery of unprepared thread and ***** can be prevented.

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PRIOR ART

(Prior art)

Intermediary **** [as] to which the pinholing of a needle 106 lets the thread of the thread coma 103 constructed across ***** 102 of the arm 101 upper part pass through stitch balancing thread tension 104, a thread guard 105, the heavens bottle that is not illustrated, it is ****(ed) as everyone knows by the iron pot under a bed in a thing as shown in the conventional needle-thread feeder, the 14th [for example,], view of a sewing machine, and sewing is performed.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

The plan with which the external view of the sewing machine by which the view 1 was equipped with this invention equipment, and the view 2 removed expansion explanatory drawing of composition important section parts, and the view 3 removed top covering, and each of 4th and 5 6 view A-A of a view 3, B-B, a C-C arrow cross section, drawing where the view 7 opened the 6th illustration top covering, The 14th and 15 views are explanatory drawings of the conventional technology at the drawing row the octavus and 9 views indicate the dispatch state of the pulse signal of a main shaft sensor and a thread-breakage sensor to be, respectively in the length of a thread cassette and a longitudinal direction cross section, the 10th, or 13 views.

- 19 Heavens bottle,
47 Sewing-machine casing,
47a A crevice, 50 .. Main part of a cassette,
51 Thread, 52 .. Flat spring
54 A seal, 54a .. Slit
55 Covering, 100 .. Thread cassette

[Translation done.]

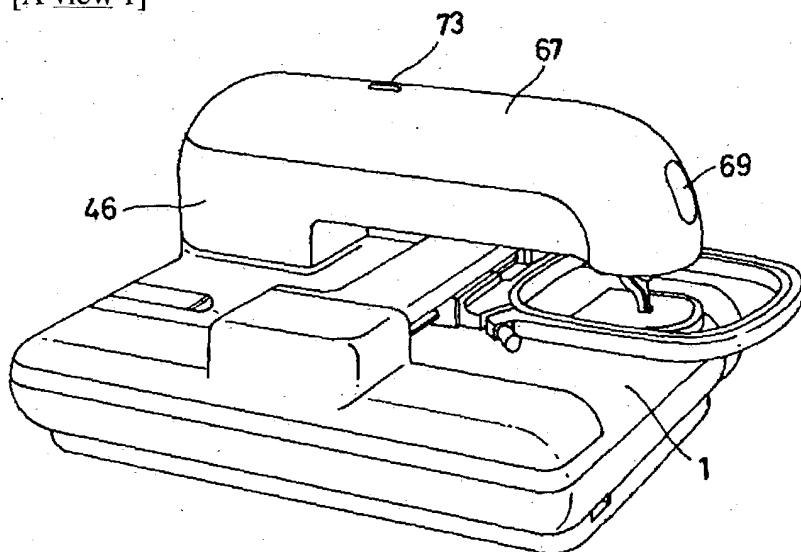
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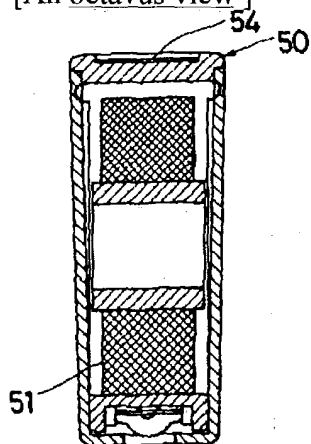
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DRAWINGS

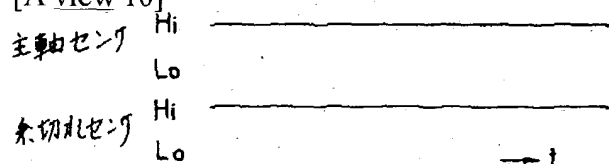
[A view 1]



[An octavus view]



[A view 10]



[A view 11]

主軸センサ Hi _____
 Lo _____
 糸切れセンサ Hi _____
 Lo _____

[A view 12]

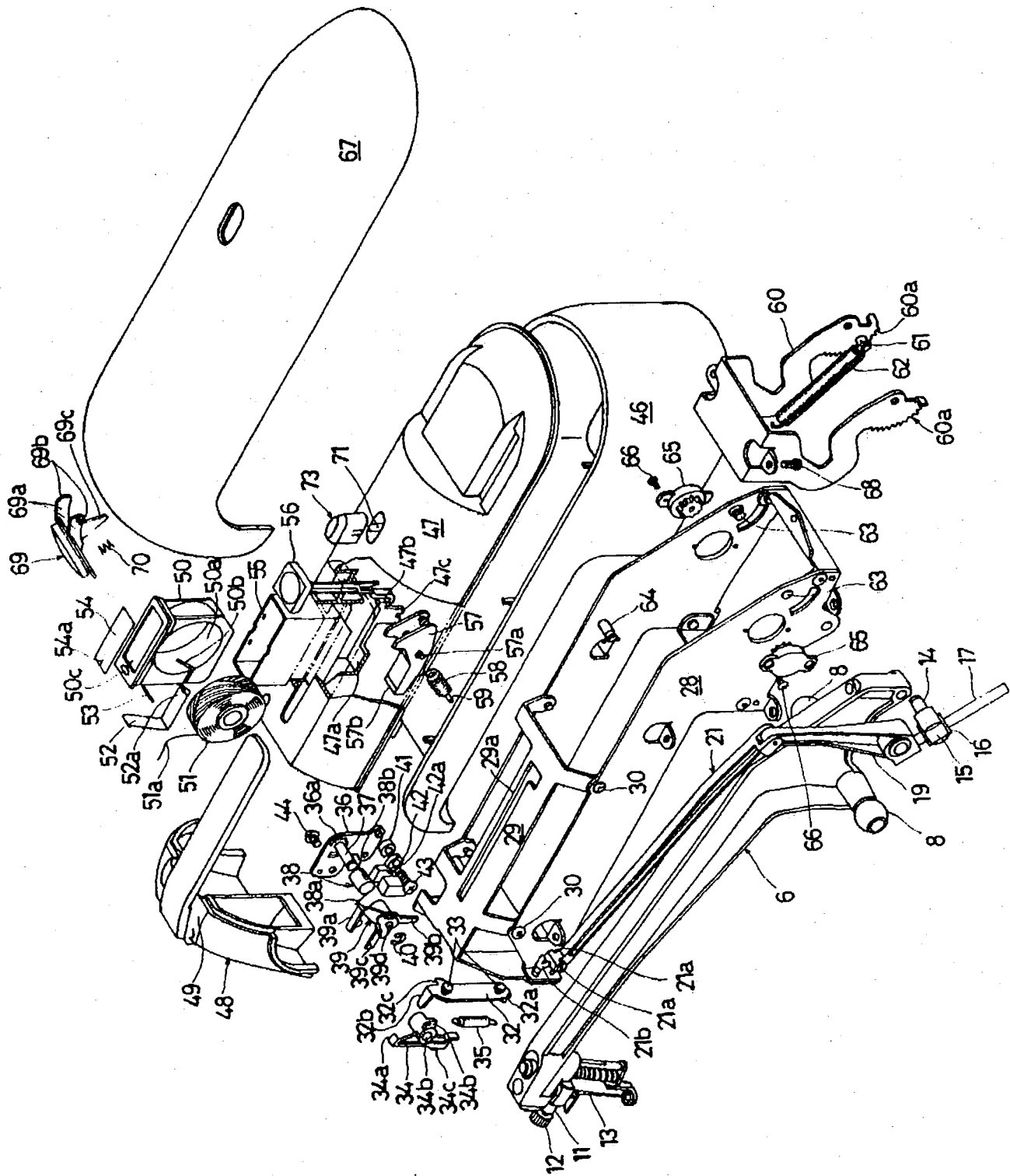
主軸センサ Hi _____
 Lo _____
 糸切れセンサ Hi _____
 Lo _____

主軸-回転

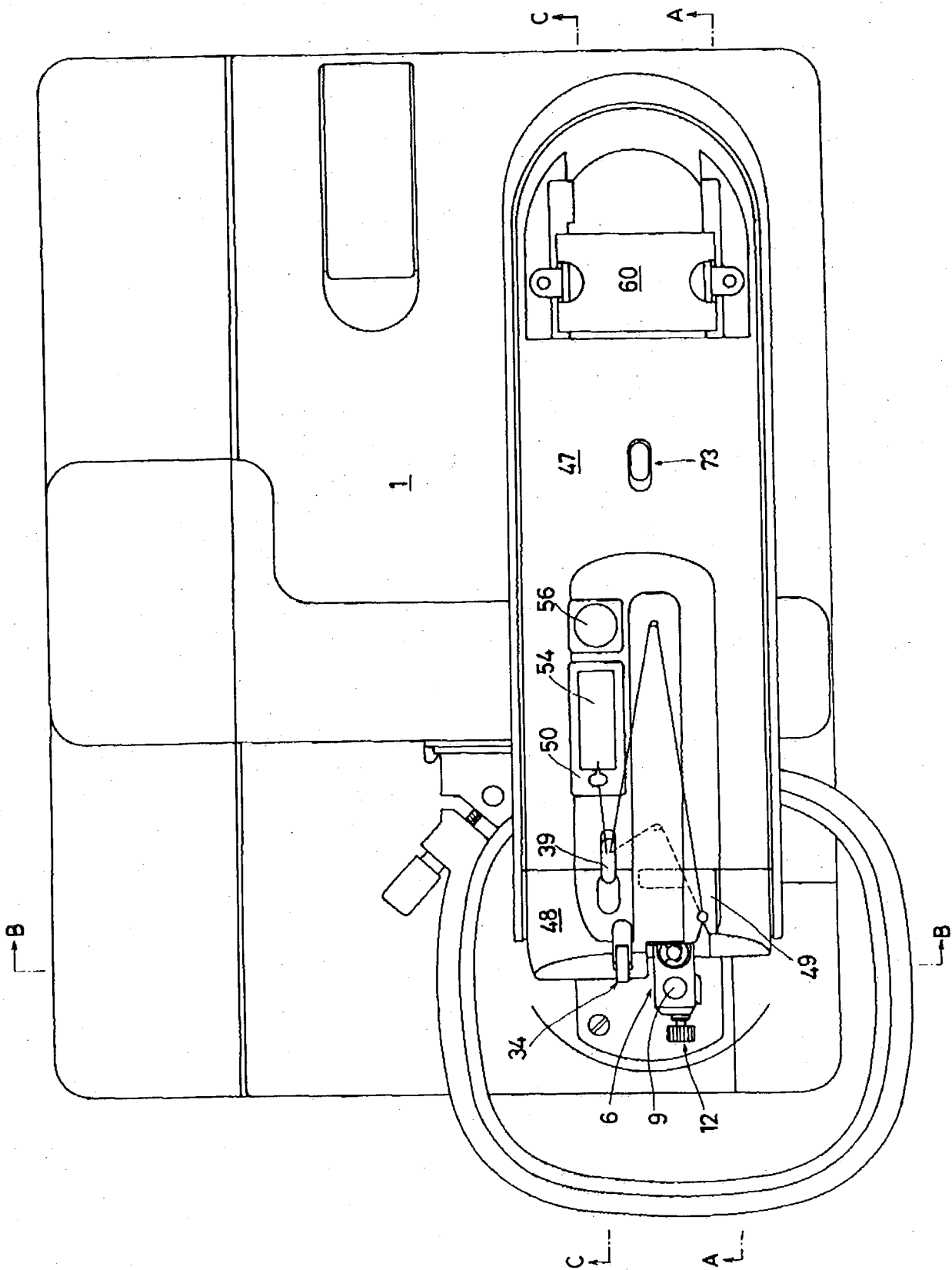
[A view 13]

主軸センサ Hi _____
 Lo _____
 糸切れセンサ Hi _____
 Lo _____

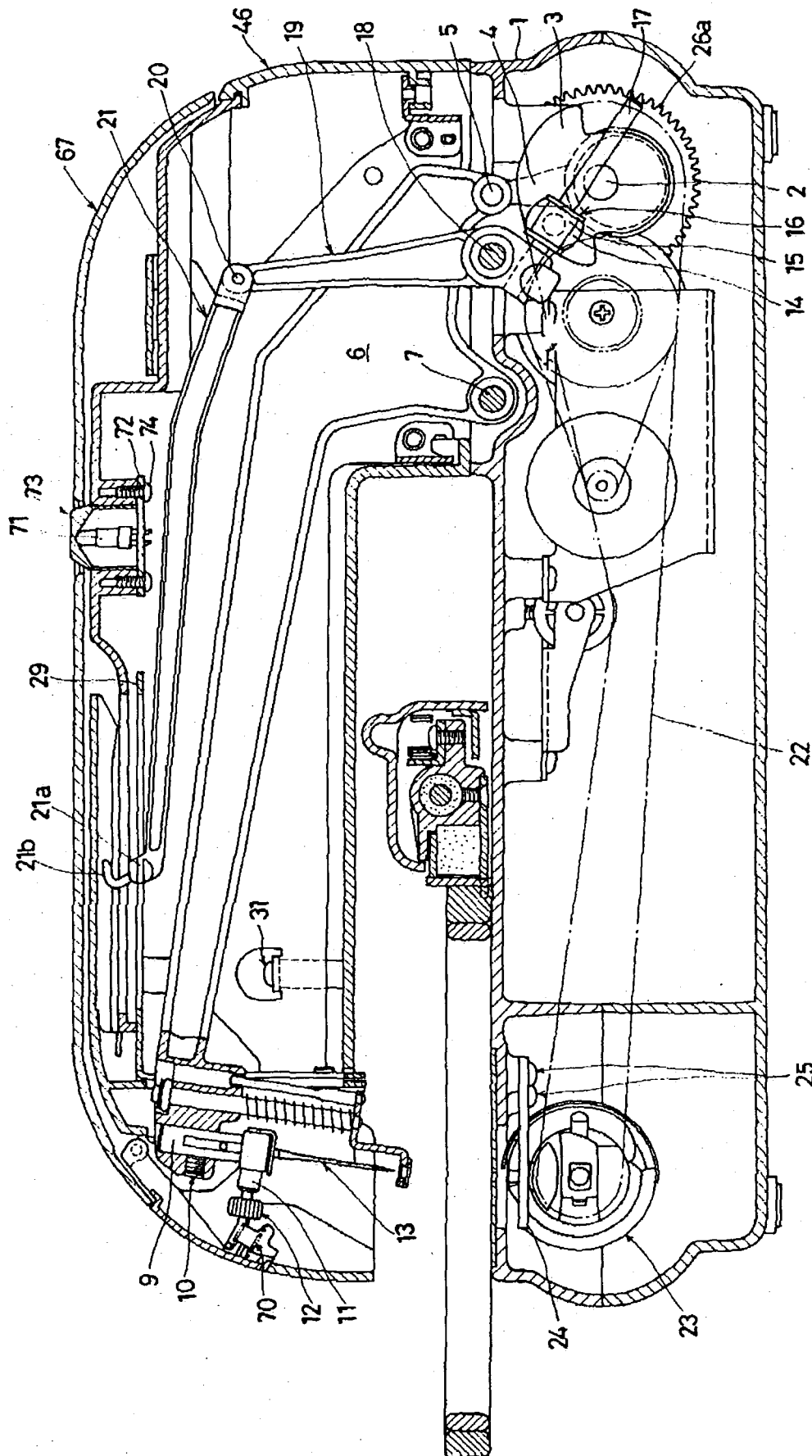
[A view 2]



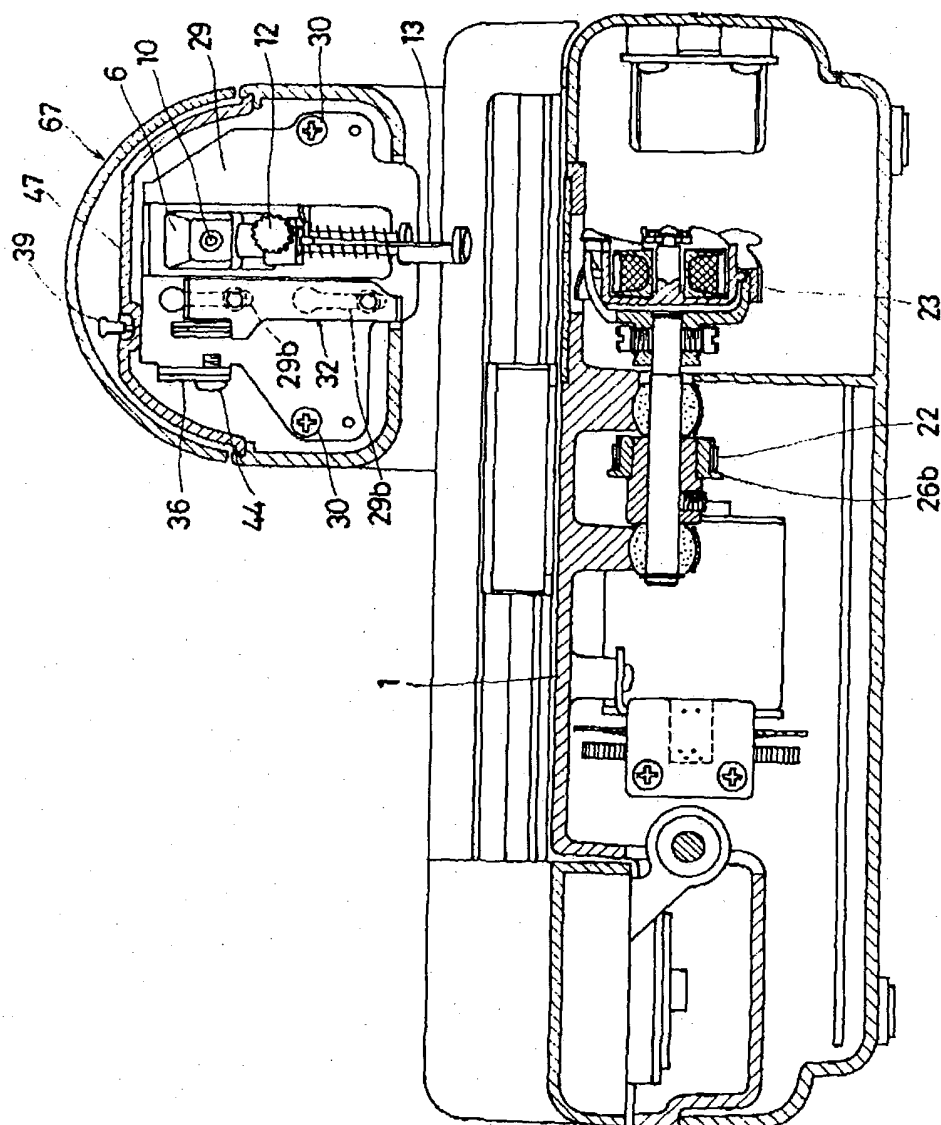
[A view 3]



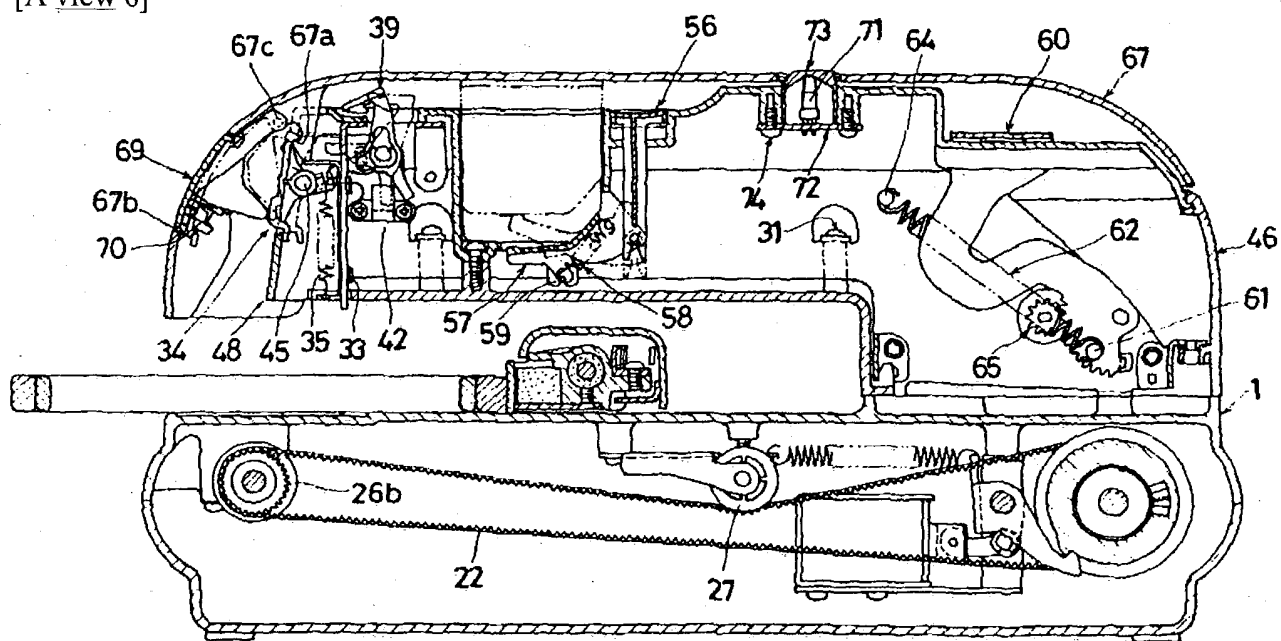
[A view 4]



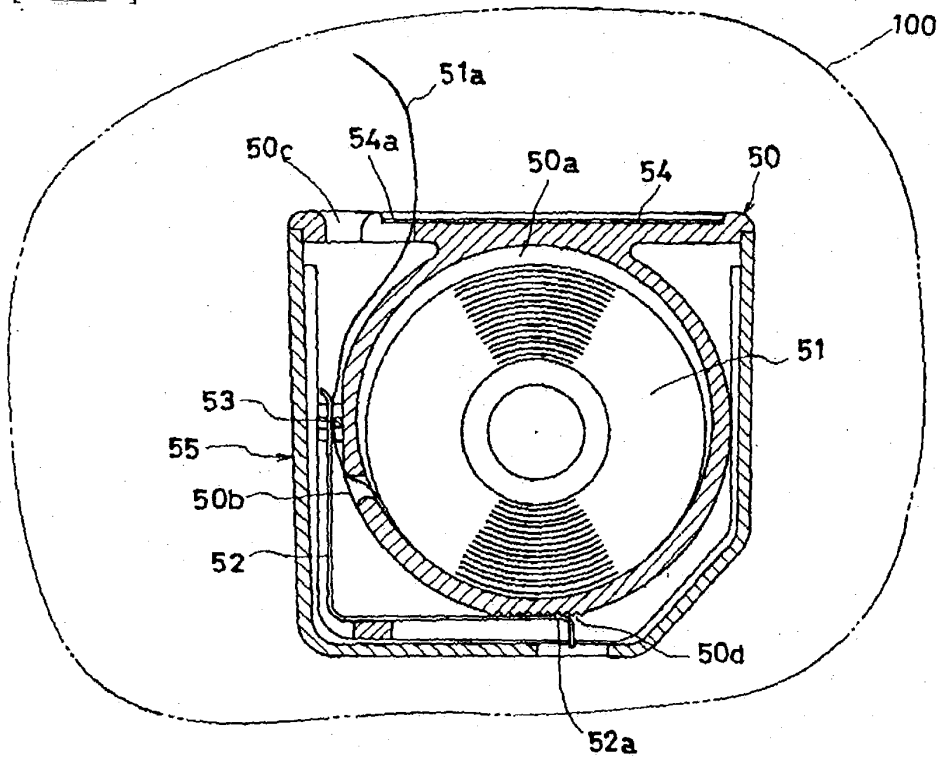
[A view 5]



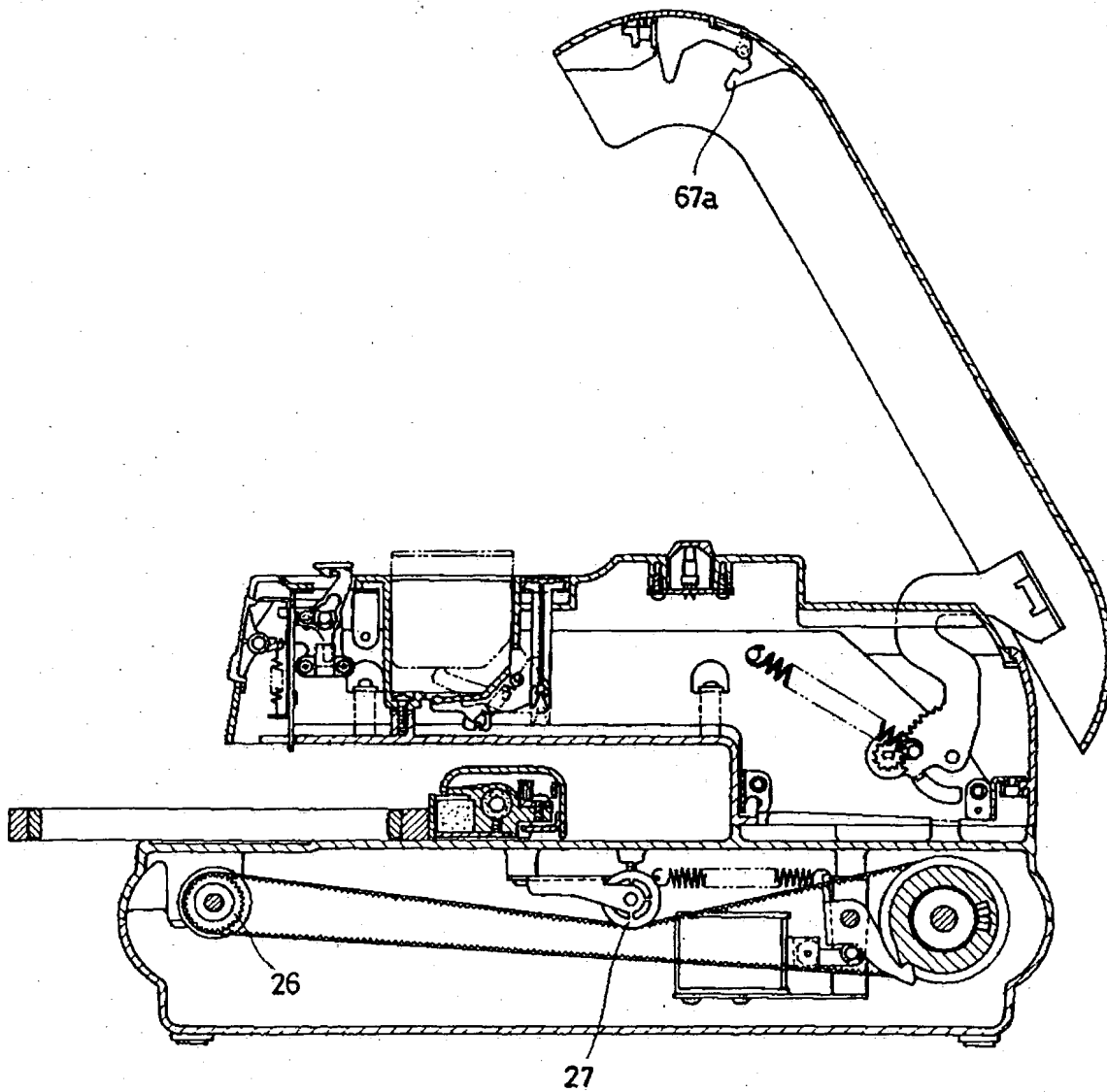
[A view 6]



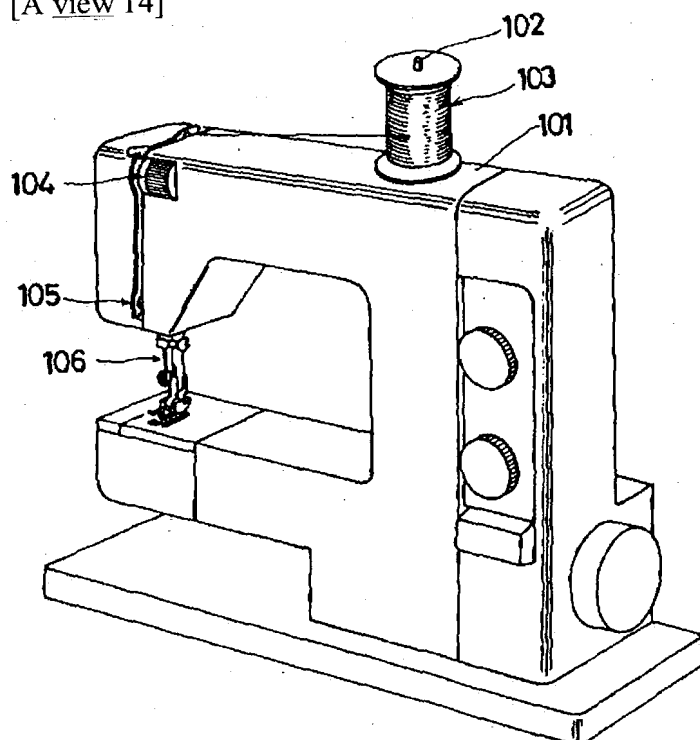
[A view 9]



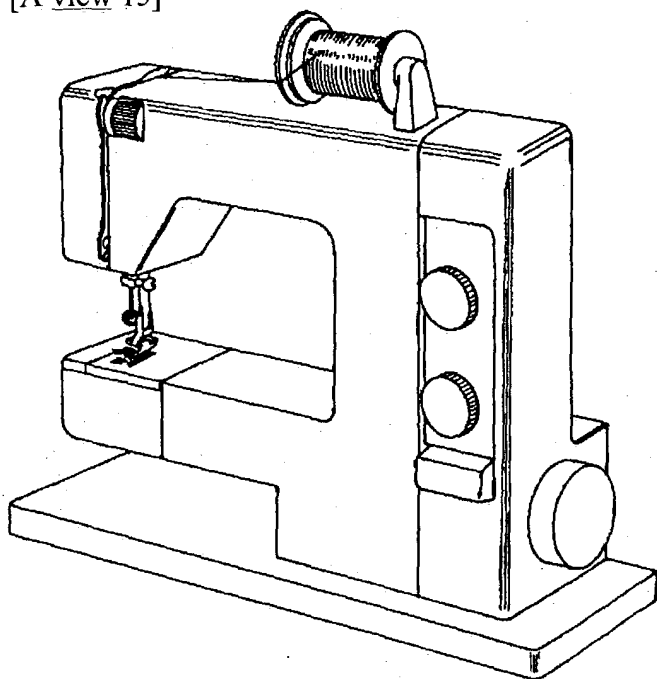
[A view 7]



[A view 14]



[A view 15]



[Translation done.]